

ABSTRACT OF THE DISCLOSURE

A fuel cell usable as a small-sized secondary cell such as a button type cell and a fuel cell system including the fuel cells are provided. The fuel cell has a first electrode, an electrolyte membrane, a second electrode, and a hydrogen storing material. The electrolyte membrane has polyfullerene hydroxide as a proton conductor. When a negative voltage is applied to the first electrode and a positive electrode is applied to the second electrode, protons, electrons, and oxygen are generated from water at the second electrode, and hydrogen is generated from the electrons and the protons at the first electrode. The hydrogen thus generated is stored in the hydrogen storing material, thus performing so-called charging. At the time of power generation, protons and electrons are generated, at the first electrode, from hydrogen supplied from the hydrogen storing material, and the generated protons are conducted to the second electrode via the electrolyte membrane and water is generated at the second electrode.